

SECTION 2 - 3

SECTION SUMMARY

The Inner Planets

Guide for
Reading

- ◆ What are the main characteristics of the inner planets?

2

Mercury, Venus, Earth, and Mars are more similar to each other than they are to the five outer planets. **The four inner planets are small and have rocky surfaces.** These planets are often called the **terrestrial planets**, from the Latin word *terra*, or “earth.”

Earth’s atmosphere includes the gases nitrogen, oxygen, and a small amount of carbon dioxide, as well as water vapor and clouds of water droplets. About 70 percent of Earth is covered with water. Earth is made up of three layers: a crust, a mantle, and a core. The crust includes the solid rocky surface. Under the crust is the mantle, a layer of molten rock. Under the mantle is the core. The outer core is liquid, but the inner core is probably solid and made up of iron and nickel.

Mercury is the planet closest to the sun. Because of this, people from Earth never get a good view of Mercury. Mercury is smaller than Earth’s moon and has no moons of its own. The planet’s interior is probably made of iron and nickel, and its surface has many plains and craters. Because the planet is so close to the sun, the side facing the sun reaches temperatures of 450°C. However, the temperature drops to –170°C at night.

Venus is similar in size to Earth. Astronomers think the density and internal structure of Venus are also similar to Earth’s. Venus rotates so slowly that its “day” is longer than its “year.” Venus rotates from east to west, the opposite direction from most other planets and moons. This type of “backward” rotation is called **retrograde rotation**. The atmosphere has 90 times the air pressure of Earth’s atmosphere. The atmosphere is mostly carbon dioxide with clouds partly made up of sulfuric acid. The carbon dioxide in the planet’s atmosphere traps the sun’s heat, causing the surface temperature of Venus to be about 460°C. This trapping of heat by the atmosphere is called the **greenhouse effect**. Explorations by the *Magellan* probe in 1991 showed that Venus has active volcanoes, many craters, and strange domes not found on other planets.

Mars is called the “red planet.” Its surface is covered in red dust that is blown around in windstorms. Astronomers have found water on Mars in the form of ice at the north pole. A layer of frozen carbon dioxide covers this ice in the winter. In 1997, photographs from orbit showed evidence that water flowed millions of years ago. The planet Mars has an atmosphere that is mostly carbon dioxide and has only 1 percent the pressure of Earth’s atmosphere. Like Earth, Mars is tilted on its axis so the seasons change. Mars has two very small moons, Phobos and Deimos.

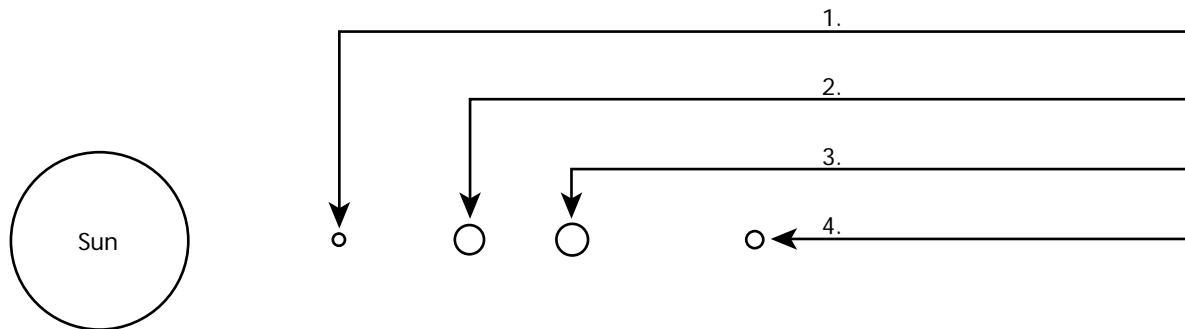
SECTION 2-3

REVIEW AND REINFORCE

The Inner Planets

◆ Understanding Main Ideas

Label the diagram with the names of the inner planets.



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Write the planet or planets the statement describes.

- _____ **5.** has a rocky surface
- _____ **6.** 70 percent is covered with water
- _____ **7.** rotates in the opposite direction from most other planets and moons
- _____ **8.** called the “red planet” because of the color of the dust
- _____ **9.** has at least one moon
- _____ **10.** similar to each other in size, density, and internal structure
- _____ **11.** has almost no atmosphere
- _____ **12.** atmosphere so heavy and thick that it would crush a human
- _____ **13.** has a tilted axis so that the planet has seasons
- _____ **14.** atmosphere has low air pressure and is mostly carbon dioxide

◆ Building Vocabulary

Write a definition for each of the following terms.

15. terrestrial planets

16. retrograde rotation

17. greenhouse effect